

**AMENDMENTS TO THE CLAIMS**

Please amend claim 4 without prejudice or disclaimer. The following listing of claims will replace all prior versions and listings of claims.

1. (Original) A material for chromatographic separations comprising a porous inorganic/organic hybrid monolith, said monolith having an interior area and an exterior surface, wherein said monolith is represented by:



wherein x and y are whole number integers and A is



wherein  $R^1$  and  $R^2$  are independently a substituted or unsubstituted  $C_1$  to  $C_7$  alkyl group, or a substituted or unsubstituted aryl group,  $R^3$  is a substituted or unsubstituted  $C_1$  to  $C_7$  alkylene, alkenylene, alkynylene, or arylene group bridging two or more silicon atoms,  $p$  and  $q$  are 0, 1, or 2, provided that  $p + q = 1$  or 2, and that when  $p + q = 1$ ,  $t = 1.5$ , and when  $p + q = 2$ ,  $t = 1$ ;  $r$  is 0 or 1, provided that when  $r = 0$ ,  $t = 1.5$ , and when  $r = 1$ ,  $t = 1$ ;  $m$  is an integer greater than or equal to 2; and  $n$  is a number from 0.01 to 100;

B is :



wherein  $R^4$  is hydroxyl, fluorine, alkoxy, aryloxy, substituted siloxane, protein, peptide, carbohydrate, nucleic acid, or combinations thereof,  $R^4$  is not  $R^1$ ,  $R^2$ , or  $R^3$ ;  $v$  is 1 or 2, provided that when  $v = 1$ ,  $t = 1.5$ , and when  $v = 2$ ,  $t = 1$ ; and  $n$  is a number from 0.01 to 100;

said interior of said monolith having a composition of A; said exterior surface of said monolith having a composition represented by A and B, and wherein said

exterior composition is between about 1 and about 99% of the composition of B and the remainder comprising A.

2. (Original) The material of claim 1 wherein said exterior surface has a composition that is between about 50 and about 90% of composition B, with the remainder comprising composition A.

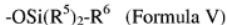
3. (Original) The material of claim 1 wherein said exterior surface has a composition that is between about 70 and about 90% of composition B, with the remainder comprising composition A.

4. (Currently Amended) ~~he~~ The material of claim 1 wherein R<sup>4</sup> is hydroxyl.

5. (Original) The material of claim 1 wherein R<sup>4</sup> is fluorine.

6. (Original) The material of claim 1 wherein R<sup>4</sup> is methoxy.

7. (Original) The material of claim 1 wherein R<sup>4</sup> is



wherein R<sup>5</sup> is a C<sub>1</sub> to C<sub>6</sub> straight, cyclic, or branched alkyl, aryl, or alkoxy group, a hydroxyl group, or a siloxane group, and R<sup>6</sup> is a C<sub>1</sub> to C<sub>36</sub> straight, cyclic, or branched alkyl, aryl, or alkoxy group, wherein R<sup>6</sup> is unsubstituted or substituted with one or more moieties selected from the group consisting of halogen, cyano, amino, diol, nitro, ether, carbonyl, epoxide, sulfonyl, cation exchanger, anion exchanger, carbamate, amide, urea, peptide, protein, carbohydrate, nucleic acid functionalities, and combinations thereof.

8. (Original) The material of claim 7 wherein R<sup>6</sup> is a C<sub>18</sub> group.

9. (Original) The material of claim 7 wherein R<sup>6</sup> is a cyanopropyl group.

10. (Original) The material of claim 1, having a specific surface area of about 50 to about 800 m<sup>2</sup>/g.

11. (Original) The material of claim 1, having a specific surface area of about 190 to about 520 m<sup>2</sup>/g.
12. (Original) The material of claim 1, having specific pore volumes of about 0.5 to about 2.5 cm<sup>3</sup>/g.
13. (Original) The material of claim 1, having specific pore volumes of about 1 to about 2 cm<sup>3</sup>/g.
14. (Original) The material of claim 1, having an average pore diameter of about 35 to 500 Å.
15. (Original) The material of claim 1, having an average pore diameter of about 100 to 300 Å.
16. (Original) The material of claim 1, having been surface modified by polymer coating.
17. (Cancelled)
18. (Cancelled)
19. (Original) The material of claim 7, having a surface concentration of R<sup>6</sup> greater than about 1.0 μmol/m<sup>2</sup>.
20. (Original) The material of claim 7, having a surface concentration of R<sup>6</sup> greater than about 2.0 μmol/m<sup>2</sup>.
21. (Original) The material of claim 7, having a surface concentration of R<sup>6</sup> greater than about 3.0 μmol/m<sup>2</sup>.
22. (Original) The material of claim 7, having a surface concentration of R<sup>6</sup> between about 1.0 and 3.4 μmol/m<sup>2</sup>.
23. (Original) The material of claim 20, having a specific surface area of about 50 to about 800 m<sup>2</sup>/g.

24. (Original) The material of claim 20, having a specific surface area of about 190 to about 520 m<sup>2</sup>/g.

25. (Original) The material of claim 20, having specific pore volumes of about 0.5 to about 2.5 cm<sup>3</sup>/g.

26. (Original) The material of claim 20, having specific pore volumes of about 1 to about 2 cm<sup>3</sup>/g.

27. (Original) The material of claim 20, having an average pore diameter of about 35 to 500 Å.

28. (Original) The material of claim 20, having an average pore diameter of about 100 to 300 Å.

29. (Original) The material of claim 20, which have been surface modified by polymer coating.

30. (Previously Presented) A method of performing a separation comprising contacting a sample with the material of claim 1.

31. (Previously Presented) The method of claim 29, wherein the sample is passed through a chromatographic column containing the material of claim 1.

32. (Original) A separation device comprising the material of claim 1.

33. (Original) The separation device of claim 30, said device is selected from the group consisting of chromatographic columns, thin layer chromatographic plates, filtration membranes, sample clean up devices, solid phase organic synthesis supports, and microtiter plates.

34. (Original) The material of claim 1, wherein the monolith has a chromatographically enhancing pore geometry.

35. (Cancelled)

36. (Previously Presented) A method of preparing a material for chromatographic separations of claim 1,

the method comprising:

- a) preparing an aqueous solution of a mixture of one or more organoalkoxysilanes and a tetraalkoxysilane in the presence of an acid catalyst, and a surfactant or combination of surfactants to produce a polyorganoalkoxysiloxane;
- b) incubating said solution, resulting in a three-dimensional gel having a continuous, interconnected pore structure;
- c) aging the gel at a controlled pH and temperature to yield a solid monolith material;
- d) rinsing the monolith material with an aqueous basic solution at an elevated temperature;
- e) rinsing the monolith material with water followed by a solvent exchange;
- f) drying the monolith material at room temperature drying and at an elevated temperature under vacuum; and
- g) replacing one or more surface C<sub>1</sub> to C<sub>7</sub> alkyl groups, substituted or unsubstituted aryl groups, substituted or unsubstituted C<sub>1</sub> to C<sub>7</sub> alkylene, alkenylene, alkynylene, or arylene groups of the monolith with hydroxyl, fluorine, alkoxy, aryloxy, or substituted siloxane groups.

37. (Cancelled)

38. (Cancelled)

39. (Cancelled)

40. (Cancelled)

41. (Cancelled)

42. (Cancelled)

43. (Cancelled)

44. (Cancelled)

45. (Cancelled)
46. (Cancelled)
47. (Cancelled)
48. (Cancelled)
49. (Cancelled)
50. (Cancelled)
51. (Cancelled)

52. (Original) A material for chromatographic separations of claim 1 comprising a porous inorganic/organic hybrid monolith, said monolith having an interior area and an exterior surface, wherein said monolith is represented by:



wherein x and y are whole number integers and A is



wherein  $R^1$  and  $R^2$  are independently a substituted or unsubstituted  $C_1$  to  $C_7$  alkyl group, or a substituted or unsubstituted aryl group,  $R^3$  is a substituted or unsubstituted  $C_1$  to  $C_7$  alkylene, alkenylene, alkynylene, or arylene group bridging two or more silicon atoms, p and q are 0, 1, or 2, provided that  $p + q = 1$  or 2, and that when  $p + q = 1$ ,  $t = 1.5$ , and when  $p + q = 2$ ,  $t = 1$ ; r is 0 or 1, provided that when  $r = 0$ ,  $t = 1.5$ , and when  $r = 1$ ,  $t = 1$ ; m is an integer greater than or equal to 2; and n is a number from 0.01 to 100;

B is :



wherein  $R^4$  is hydroxyl, fluorine, alkoxy, aryloxy, substituted siloxane, protein, peptide, carbohydrate, nucleic acid, or combinations thereof,  $R^4$  is not  $R^1$ ,

$R^2$ , or  $R^3$ ;  $v$  is 1 or 2, provided that when  $v = 1$ ,  $t = 1.5$ , and when  $v=2$ ,  $t = 1$ ; and  $n$  is a number from 0.01 to 100;

said interior of said monolith having a composition of A; said exterior surface of said monolith having a composition represented by A and B, and wherein said exterior composition is between about 1 and about 99% of the composition of B and the remainder comprising A;

said material prepared by a process comprising:

- a) preparing an aqueous solution of a mixture of one or more organoalkoxysilanes and a tetraalkoxysilane in the presence of an acid catalyst, and a surfactant or combination of surfactants to produce a polyorganoalkoxysiloxane;
- b) incubating said solution, resulting in a three-dimensional gel having a continuous, interconnected pore structure;
- c) aging the gel at a controlled pH and temperature to yield a solid monolith material;
- d) rinsing the monolith material with an aqueous basic solution at an elevated temperature;
- e) rinsing the monolith material with water followed by a solvent exchange;
- f) drying the monolith material at room temperature drying and at an elevated temperature under vacuum; and
- g) replacing one or more surface  $C_1$  to  $C_7$  alkyl groups, substituted or unsubstituted aryl groups, substituted or unsubstituted  $C_1$  to  $C_7$  alkylene, alkenylene, alkynylene, or arylene groups of the monolith with hydroxyl, fluorine, alkoxy, aryloxy, or substituted siloxane groups.

53. (Original) A method of forming a porous inorganic/organic hybrid monolith comprising:

(a) forming a porous inorganic/organic hybrid monolith having surface silicon-alkyl groups;

(b) replacing one or more surface silicon-alkyl groups of the hybrid monolith with hydroxyl groups;

- (c) replacing one or more surface silicon-alkyl groups with halo groups;
- (d) bonding one or more substituted siloxane groups to the surface of the hybrid monolith; and
- (e) end-capping the surface of the hybrid monolith with trialkylhalosilane.

54. (Cancelled)

55. (Cancelled)

56. (Cancelled)